

GE Fuel Cells

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November 18, 2014



GE's portfolio ... structured for growth

- 8 businesses operating in more than **100** countries ... **125+** years
- **>300,000** employees worldwide

Power & Water

17%



Oil & Gas

11%



Energy Management

5%



Aviation

15%



Healthcare Transportation

12%



Transportation

4%



Home & Business Solutions

6%



GE Capital

30%



Power & Water ... largest industrial business

>37,000 employees >120 countries



Power Gen Products



Power Gen Services



Distributed Power



Renewables



Water & Process Technologies



Nuclear

Diverse technology & services solutions ... >1,000GW installed globally



GE's capabilities are a differentiator



Aviation heritage

- >60,000 turbines installed¹
- Aerodynamics, adv. materials, reliability



Engines heritage

- >55,000 gas & diesel engines installed²
- Combustion, emissions, efficiency



Research centers

- 7 centers spread across 4 continents
- Investments in software & services



Global footprint

- Global Growth Organization (GGO)
- Global supply chain

Breadth of resources to enable success



¹ Includes Aviation & Aero turbines. For Aviation includes GE (40k), CFM (18k) & EA (0.2k). CFM is a 50/50 JV between GE & Snecma. EA is a 50/50 JV between GE and Pratt & Whitney ² Includes engines from GE Transportation & Distributed Power

Mega trends driving growth

↑ Efficiency & ↓ Pollution



Grid firming for



Need for resiliency



Increased gas availability

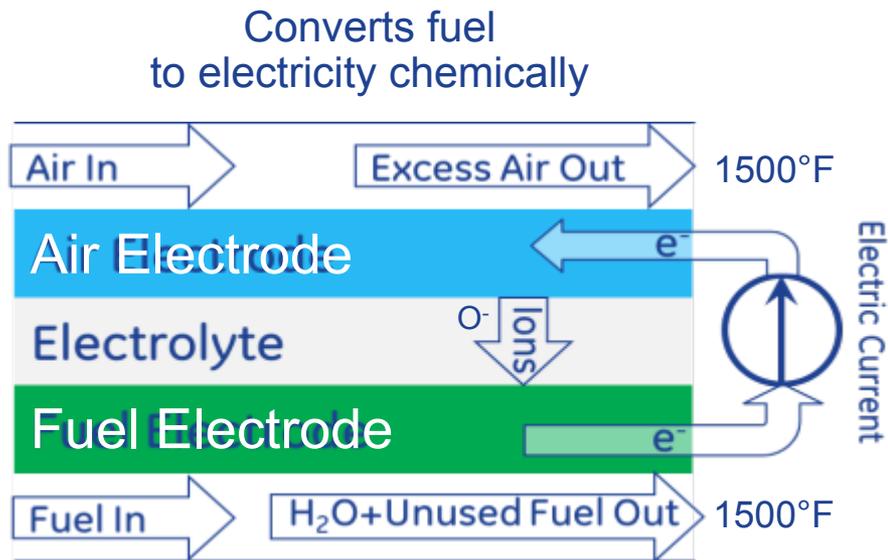


These trends drive the need for distributed power globally



Why fuel cells?

Technology



Advantages

- High Efficiency
- Ultra low emissions
- Fuel flexible
- Power when you need it
- Power where you need it: Sized for Distributed Power

50+ years of development ... cost always the challenge

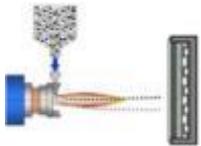


GE – Fuel Cells

SOFC/Recip Hybrid System...



GE differentiation



Advance manufacturing
• Plasma spray technology

Simple Hybrid System

- Integrated gas engine generator set

...Revolutionary

- 65% system efficiency
- Scalable: 1-10 MW
- Retrofit capability
- Resilience



Innovating to address the fuel cell cost challenge

Hybrid Fuel Cell System

- 1-10 MW electrical output
- 65% Efficiency
- NG Fueled
- Minimal site installation
- Turn down capability
- Low GHG emissions



Clean reliable on-site energy

Distributed power generation

Industrial/Commercial

On site power. High efficiency, reliability & low emissions

Sub-station powering

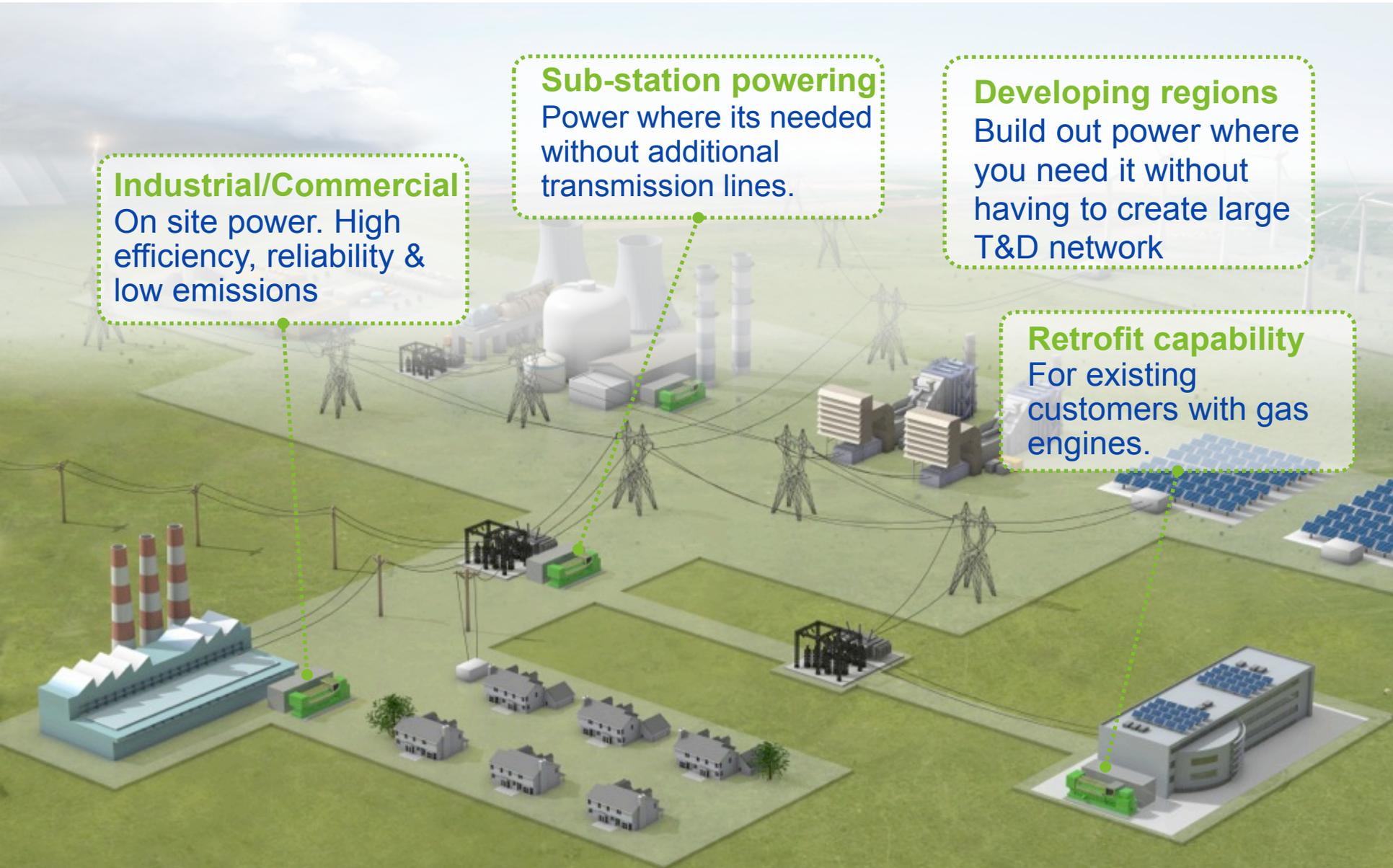
Power where its needed without additional transmission lines.

Developing regions

Build out power where you need it without having to create large T&D network

Retrofit capability

For existing customers with gas engines.

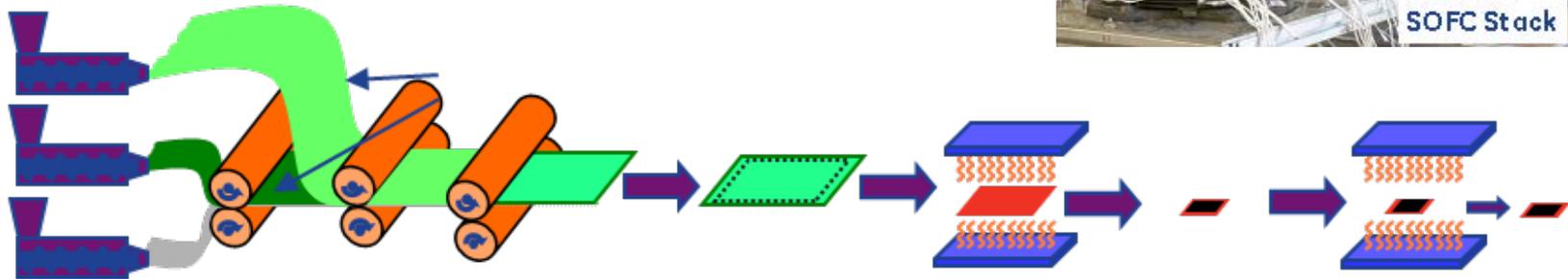


A look back at GE's SOFC research

Background:

GE program with DOE 2000-2006:

Sintered Manufacture of SOFC Cells



- Large investment required for sintering factory
- High projected Cost of Electricity
- In 2006 GE abandoned sintering research . . .
refocus on low cost manufacturing



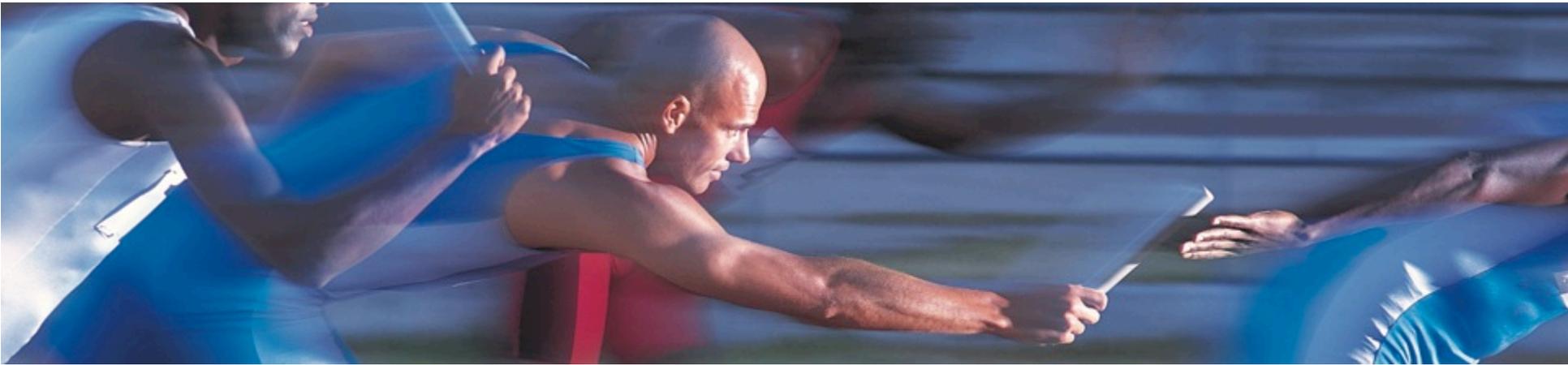
Advance manufacturing - Thermal spray

State of the art spray cells:

- ✓ Leverage GE thermal spray expertise
- ✓ Larger cell area
- ✓ Simplified sealing
- ✓ Low Capex
- ✓ Low-cost materials set
- ✓ Repeatable



GE's Fastworks approach. . .



- Drives speed to market & customer value
- Internal incubation with independent leadership
- Ramping up off site facility with pilot manufacturing capability

**Speed, agility and focus of a small start-up ...
with access to all the strength of a big company**



Building an internal start-up. . .

- LLC under GE Ventures ...fully funded by GE
- Independent leadership with Board of Directors
- Currently 24 employees
- Leasing off-site space at NYSERDA's Saratoga Technology & Energy Park – Malta, NY
- Grand Opening August 26th



Malta pilot facility



50kW demonstration

Hudson Valley Community College (HVCC) Tech smart campus



Test and evaluation platform housed in a 40ft container



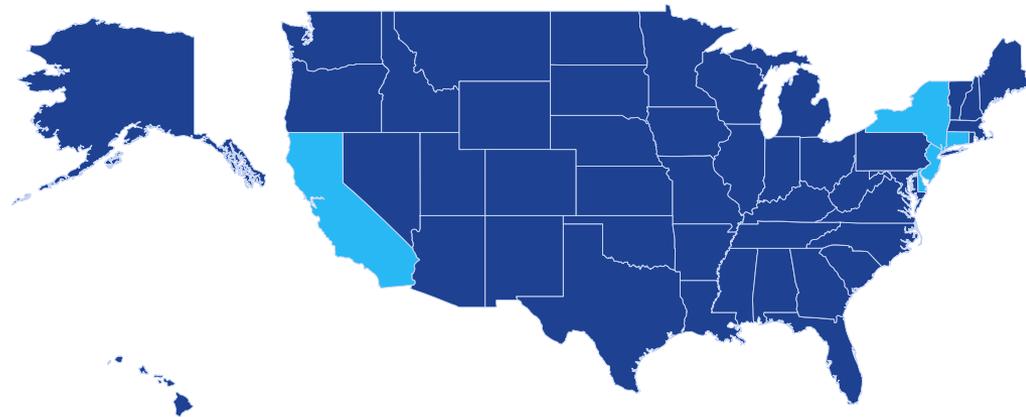
Incentives

The US stationary fuel cell market now exceeds 225MW installed, supported primarily by subsidies in five states

Bloomberg Energy Smart Technologies – Fuel Cell Research Note 14 August 2014

Existing incentives

- Federal business energy investment tax credit
- States - CA, CT, NY, NJ & DE

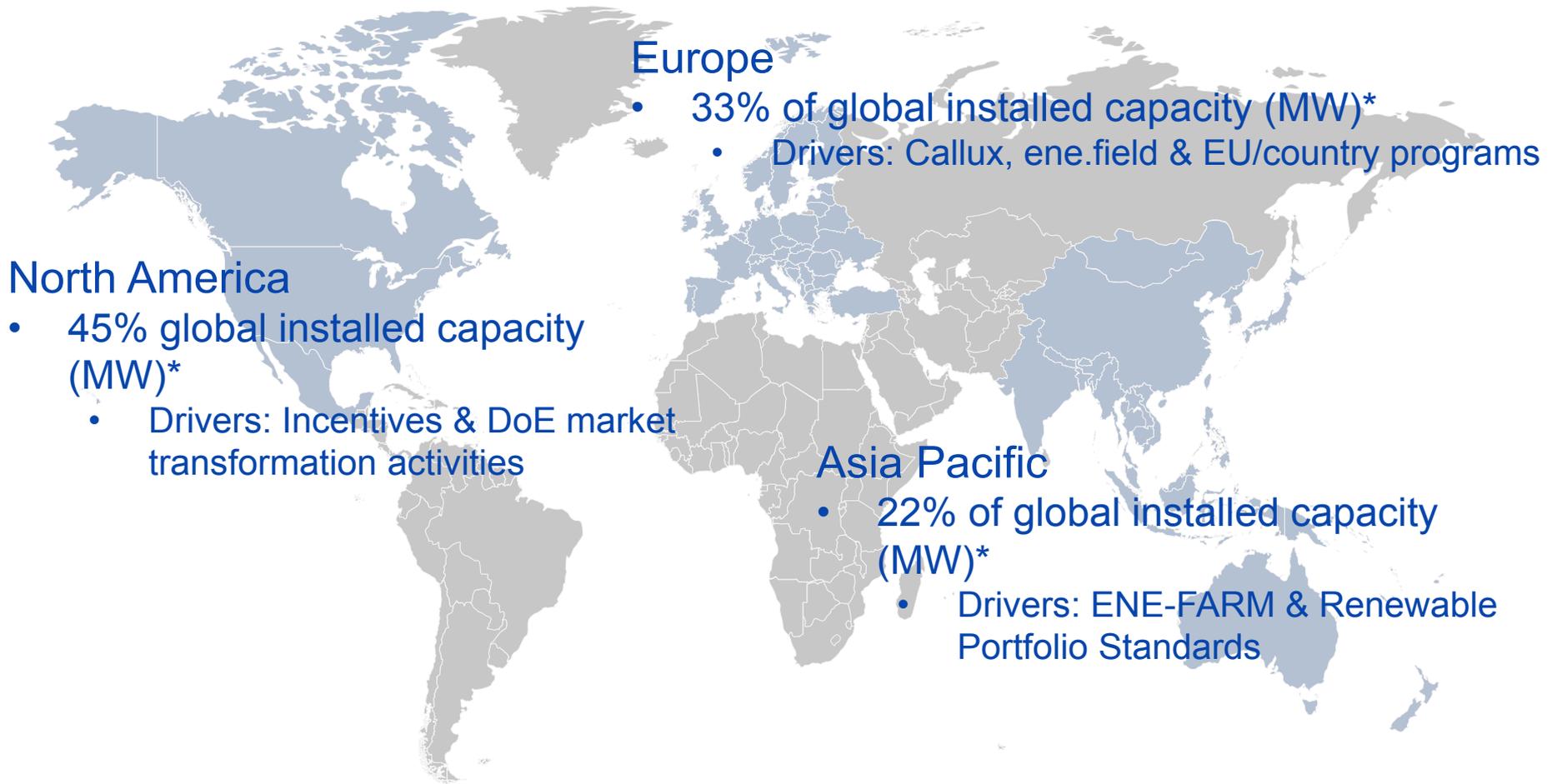


Incentive and market transformation activities are required to drive adoption and reduce costs through economies of scale.



Globalization

International competition increasing



North America

- 45% global installed capacity (MW)*
 - Drivers: Incentives & DoE market transformation activities

Europe

- 33% of global installed capacity (MW)*
 - Drivers: Callux, ene.field & EU/country programs

Asia Pacific

- 22% of global installed capacity (MW)*
 - Drivers: ENE-FARM & Renewable Portfolio Standards



* Based on data from Bloomberg New Energy Finance

